

REMARKS

In response to the Office Action mailed January 20, 2010 (Paper No. 20091230), please consider the following remarks. This amendment is submitted to be fully responsive to the outstanding Office Action. By way of this amendment, claims 3, 6 and 8-10 have been amended; claims 1, 2, 4 and 11 have been canceled; and claims 12-14 are newly presented. In total, claims 3, 5-10 and 12-14 remain pending in the application upon entry of this amendment. Support for currently presented claim amendments and new claims is found in the application as filed at page 17, Examples 13 and 14, as well as being within the claims as filed. As such, it is submitted that no new matter has been added to the application by way of these amendments.

The outstanding rejection with respect to claims 1-3, 9 and 11 under 35 U.S.C. §102(e) as anticipated by Kweon et al. (U.S. Patent No. 6,756,155 B1) is moot in view of the above claim amendments. Likewise, the rejection of claim 10 under 35 U.S.C. §103(a) over Kweon et al. in view of Yoshida et al. (U.S. Patent Application Publication No. 2002/0102464 A1) (Paper No. 20091230, section 4, page 3) is also moot in view of claim 10 now being dependent from independent claim 7. Thus, the only outstanding rejection of relevance to the pending claims is that of claims 4-8 under 35 U.S.C. §103(a) over Barker et al. (U.S. Patent Application Publication No. 2004/0214084 A1) in view of Yoshizawa et al. (U.S. Patent Application Publication No. 2002/0192551 A1). Reconsideration and withdrawal of this rejection is requested on the basis that the prior art neither teaches nor expressly suggests the inventive modifications of the pending claims.

**Remarks Directed to Rejection of Pending Claims 4-8 under
35 U.S.C. §103(a) over Barker et al. in View of Yoshizawa et al.**

The basis of the rejection is that Barker et al. with respect to paragraphs [0024]-[0030] provides a formula which when A is lithium and c equals 0 reads on the Applicant's formula of LiX-M (Paper No. 20091230, section 5, paragraph spanning pages 4-5).

Applicant respectfully submits that this finding of fact with respect to Barker et al. represents an improper reading of Barker et al. on the basis that the general formula provided in Barker et al. at paragraph [0024] can never have $c = 0$ as defined in paragraph [0028] that states that c is less than or equal to 3 and is greater than 0. As such, it is respectfully submitted that as c can never equal 0, Barker et al. fails to afford any of the compositions detailed in pending independent claims 5-8, the only independent claims pending in the application. Yoshizawa et al. is submitted to lack a teaching sufficient to bolster the above-detailed deficiencies of Barker et al. The findings of fact with respect to Yoshizawa et al. are consistent with Applicant's assertion that Yoshizawa et al. fails to bolster the compositional deficiencies of Barker et al. (Paper No. 20091230, section 5, paragraph spanning pages 7-8). On this basis alone, reconsideration and withdrawal of the outstanding rejection is requested.

Additionally, pending independent claims 5-7 recite that the metal M is "initially in metallic form" and present in the "form of metal clusters" that are dispersed with the LiX or Li₂O "at an atomic scale or at a nanometer scale" (claim 5) or "at a nanometer scale" (claim 6 and referential independent claim 8).

The current status of the law is that an obviousness rejection with respect to the chemical arts requires an express teaching as how the prior art would have suggested making the specific molecular modifications required to achieve the claimed invention. An express showing of

where the cited prior art suggests the particular modifications is particularly required in the chemical arts. For a case of *prima facie* obviousness to be found for chemical matter, “[i]n addition to structural similarity between the compounds, a *prima facie* case of obviousness also requires a showing of ‘adequate support in the prior art’ for the change in structure.” *Takeda Chem. Indus., Ltd. v. Alphapharm Pty, Ltd.*, 83 USPQ2d 1169, 1174 (Fed. Cir. 2007). The court further made expressly clear that “in order to find a *prima facie* case of unpatentability in such instances, a showing that the ‘prior art would have suggested making the specific molecular modifications necessary to achieve the claimed invention’ was also required.” *Id.* (quoting *In re Deuel*, 51 F.3d 1552, 1558 (Fed. Cir. 1995) (internal references omitted)). The court clarified that this test for chemical compounds is “consistent with the principles enunciated in *KSR*.” *Id.* (citing *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007)).

The most relevant teaching for which Barker et al. is cited relative to the spatial relationship between the lithium fluoride and metal is paragraph [0067]. (Paper No. 20091230, section 5, page 6, second and third full paragraphs). Barker et al. is also cited as teaching the use of graphite and carbon black in metal particles. It is respectfully submitted that the cited portions of Barker et al. fail to motivate one of ordinary skill in the art to specifically modify the teachings of Barker et al. to provide either atomic scale or nanometer scale intermixing of metal clusters with lithium fluoride or lithium oxide. Specifically, paragraph [0067] of Barker et al. is submitted to be properly read as providing carbon particles that provide “nucleation sites for the production of the product crystals”. It is submitted that a proper reading of the term “product crystals” in the context of Barker et al. is those crystals detailed at paragraphs [0024]-[0030]. It is submitted that Barker et al. fails to provide a suggestion as to the value of atomic scale or nanometer scale intermixing of any material disclosed therein as well as the compositionally

different materials currently being claimed. It is respectfully submitted that Barker et al. teaches away from modifying the compositions disclosed in paragraphs [0024]-[0030] to those being claimed on the basis of the superior performance noted in paragraphs [0031]-[0037] for compositions having nonzero values for “c” so as to introduce complex structures XY₄. It is respectfully submitted that Yoshizawa et al. fails to bolster the above-detailed deficiencies of Barker et al. and indeed teaches away from the claimed subject matter.

Yoshizawa et al. teaches at paragraph [0027] that the positive electrode plate 5 “comprises an iron compound which is a positive electrode active material with particle size of 1 to 300 nm or less, being composed of primary particles substantially made of pore-free matter, and a compound layer including conductive agent and binding agent ...”. Yoshizawa et al. teaches negative electrode materials at paragraph [0035] that include “graphite and other carbon materials, lithium metal, lithium alloy, material having a metal element for forming an alloy with lithium, transition metal oxide, transition metal sulfide, and transition metal nitride”.

With respect to all of the pending independent claims, Yoshizawa et al. nowhere teaches a positive electrode in which metal clusters are intermixed with lithium fluoride or lithium oxide and instead teaches such an electrode to be substantially iron nanoparticles that are pore free (see Yoshizawa et al. [0027] or claim 1). As such, it is respectfully submitted that the prior art combination of Barker et al. and Yoshizawa et al. fails to afford a *prima facie* case of obviousness with respect to any of the pending independent claims 5-8.

Pending dependent claims 3, 9, 10 and 12-14 are believed to be patentable on the basis of dependency from a base claim that is now in allowable form. Additional bases are believed to exist for patentability of the subject matter of a number of these dependent claims. Applicant

reserves the right to make of record such additional arguments in the event that the outstanding rejection is maintained.

Based on the above remarks and amendments, withdrawal of the rejection as to the pending claims under 35 U.S.C. §103(a) over Barker et al. in view of Yoshizawa et al. is requested.

Summary

With entry of this amendment, claims 3, 5-10 and 12-14 are pending, of which only claims 5-8 are in independent form. Claims 1, 2, 4 and 11 have been canceled; claims 3, 6 and 8-10 have been amended. Claims 12-14 are newly presented. Each of the pending claims is now believed to be in allowable form and directed to patentable subject matter. Reconsideration and withdrawal of the outstanding rejections and the passing of this application to allowance are respectfully requested. Should the Examiner have any suggestion as to how to improve the form of any of the pending claims, it is requested that the undersigned attorney in charge of this application be contacted at the telephone number given below.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 07-1180.

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Respectfully submitted,

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